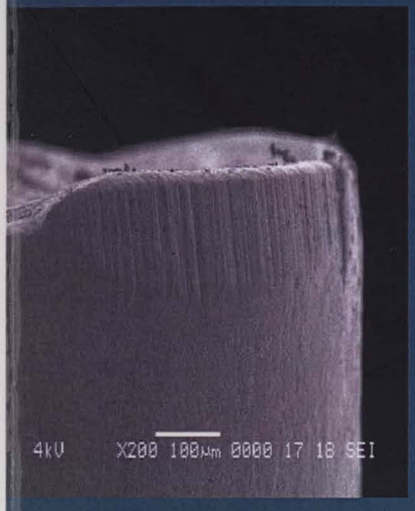

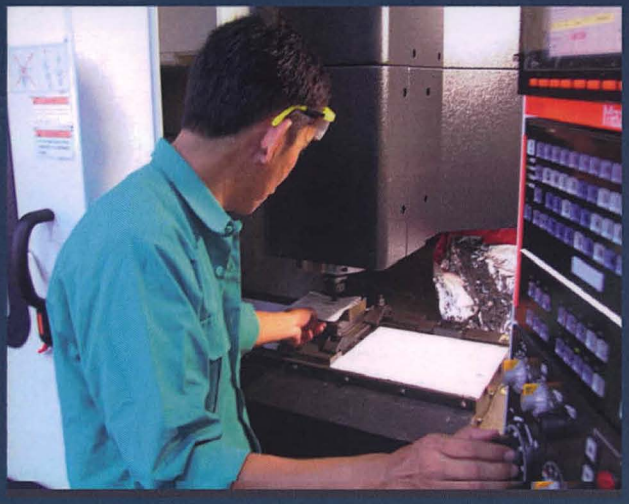

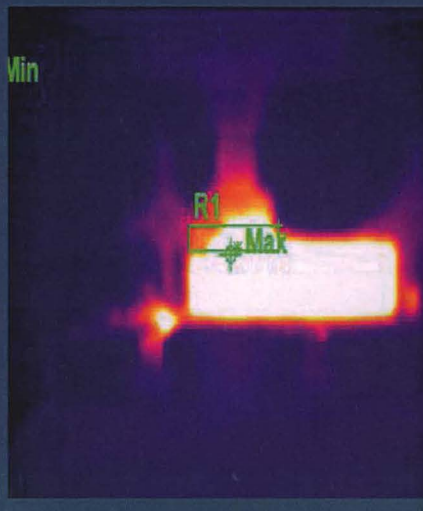

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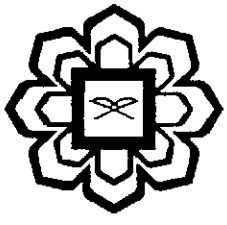

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Chapter 16

Implementation of FMECA on Computer Integrated Manufacturing (CIM)

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1. Introduction

Failure Mode and Effect Analysis (FMEA) is one of the most commonly used reliability and system safety analysis techniques which is used to identify possible failure modes, their causes, and the effects of this failure. Proper identification of failures by applying FMEA may lead to solutions that increase the overall reliability, improve quality and safety of a product. Initially, the FMEA is performed while in the design stage, but it also may be used throughout the life cycle of a product to identify possible failures as the system ages. As a FMEA technique develop, assessment of critical is added into FMEA which becomes a Failure Mode, Effects, and Critical Analysis, or FMECA .The C in FMECA indicates that the criticality (or severity) of the various failure effects are considered and ranked. So it can be say that FMECA is essentially an FMEA, with an added critical analysis.

2. Computer integrated manufacturing (CIM) system

Computer-integrated manufacturing (CIM) is a *method of manufacturing in which the entire production process is controlled by computer.* Typically, it relies on closed-loop control processes, based on real-time input from sensors. It is also known as flexible design and manufacturing. Normally CIM is a three-stage process, beginning at graphics terminals where humans and computers collaborate together to design the new product. In the second stage, other computers plan every step of production down to the smallest detail and finally the actual plans are carried out by robots and machine tools on the factory floor.